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REMARKS

Claims 1-21 were pending in the present application and remain for consideration upon entry of the present response.

The specification has been amended to explain the abbreviation HDT in paragraph [0010]. The abbreviation HDT stands for heat deflection temperature. Support for the definition can be found in the headings of Table 1. Applicants have also defined the abbreviations PPE and HIPS contained in the same paragraph. Support for the unabbreviated definition of these terms can be found in paragraph [0015].

Claims 1-3, 8-11, 16, and 19-21 have been amended. Claims 1, 11, and 16 have been amended to include claim language of "a flame retardant composition consisting essentially of", generally, an organophosphate and a polyhydric alcohol. Support can be found in paragraph [0050]. Claims 2 and 3 have been amended to provide proper antecedence for the term "pentaerythritol". Claims 8 and 19 have been amended to replace the abbreviated terms with unabbreviated terms, support for which can be found in paragraph [0009]. Claims 10 and 20 have been amended to place them in proper Markush format. Claims 9 and 21 have been amended to correct an informality noted with the language of the claim. No new matter has been entered by any of the above noted amendments.

Reconsideration and allowance of the claims is respectfully requested in view of the following remarks.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 2, 3, 8, 10, 19, and 20 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner has asserted that "Claim 25 is vague in reciting 'substantially free' in line 1" (8/6/02 Office Action, page 6, paragraph 8). Applicants respectfully traverse.

The rejections have been rendered moot in view of the amendments thereto.

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Claim Rejections Under 35 U.S.C. § 102(e)

A. Claims 1-21 stand rejected under 35 U.S.C. § 102(e), as allegedly anticipated by U.S. Patent No. 6,346,574 to Nishihara, U.S. Patent No. 6,423,768 to Khouri, or U.S. Patent Application No2003/01395504 to Miebach. Applicants respectfully traverse these rejections.

1. U.S. Patent No. 6,346,574 to Nishihara (hereinafter "Nishihara")

Nishihara generally describes a fire retardance-imparting additive, which comprises a substituted aromatic vinyl resin having acid salt groups as the substituents on the aromatic rings. The fire-retarding additive can be blended with at least one thermoplastic resin and a fire retardant can also be blended with them, if necessary. Thus, the thermoplastic resin composition having flame retardancy as taught by Nishihara must contain a substituted aromatic vinyl resin having acid salt groups as the substituents on the aromatic rings.

Applicants' Claim 1 is reproduced below for convenience.

1. A thermoplastic resin composition comprising:

a thermoplastic resin; and

a flame retardant composition consisting essentially of an organophosphate in an amount less than or equal to about 20 parts by weight for every 100 parts by weight of the thermoplastic resin, and a polyhydric alcohol in an amount of about 0.25 to about 5.0 parts per weight for every 100 parts by weight of the thermoplastic resin.

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Applicants respectfully assert that Nishihara cannot anticipate their Claim 1 because Nishihara does not teach the Claim 1 limitation of "a flame retardant composition consisting essentially of an organophosphate in an amount less than or equal to about 20 parts by weight

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for every 100 parts by weight of the thermoplastic resin, and a polyhydric alcohol in an amount of about 0.25 to about 5.0 parts per weight for every 100 parts by weight of the thermoplastic resin". Rather, Nishihara teaches compositions requiring a retardance-imparting additive of a substituted aromatic vinyl resin having acid salt groups as the substituents on the aromatic rings. It therefore does not satisfy Applicants' Claim 1 limitation.

As Nishihara does not teach all elements of Applicants' Claim 1, Nishihara cannot anticipate Claim 1. Given that Claims 2-10 each depend ultimately from and further limit Claim 1, Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of Claims 1-10 under 35 U.S.C. § 102(b) over Nishihara. In view of the amendments to independent Claims 11 and 16, it is respectfully requested that the rejection of Claims 11-21 be withdrawn for similar reasons.

2. U.S. Patent No. 6,423,768 to Khouri (hereinafter "Khouri")

Khouri generally describes polymer-organoclay composite compositions. The polymer-organoclay composite compositions generally include (A) at least one thermoplastic polymer bearing amine groups, (B) at least one organoclay generally containing a quaternary ammonium ion including at least two alkyl or cycloalkyl groups, (C) a thermoplastic resin different from (A), (D) an impact modifying agent, and (E) a compatabilizing agent. The polymer organoclay composite compositions may also be blended with any conventional additives, e.g., flame retardants, UV absorbers, antioxidants, heat stabilizers, antistatic agents, mold release agents, slip agents, anti-blocking agents, lubricants, anti-clouding agents, coloring agents, natural oils, synthetic oils, waxes, inorganic fillers, and mixtures thereof.

It has been held that a composition of matter is anticipated only if the disclosure in a single reference places that composition in possession of the public. In order to determine whether the composition is in possession of the public, the courts have previously held that the reference must "clearly and unequivocally disclose the claimed composition or direct those skilled in the art to the compound without any need for picking, choosing, and

combining various disclosures..." . *In re Arkley*, 455 F2d 586, 587, 172 USPQ 524,526 (CCPA 1972). The reference must therefore provide a certain degree of precision with respect to the specific composition claimed. For example, in *Ex parte Westphal*, 223 USPQ 630 (Bd. Pat. App. 1983), the claim was directed to a composition containing 3-methylthio-4-amino-6-tert-butyl-1,2, 4-triazine-5-one. The examiner rejected the claim under section 102 as anticipated by, *inter alia*, a patent to Fawzi. The Fawzi patent disclosed a compound substituted at a particular position with alkyl having 1 to 8 carbon atoms, but did not specifically name the claimed tert-butyl radical. Thus, the Board found that the Fawzi patent did not provide the precise precision necessary for anticipation under 102. *Ex parte Westphal*, 223 USPQ at 631.

Similarly, in *Arkley*, the court found that the single claimed compound was not described in the prior art within the meaning of 102. The prior art generically disclosed a class of compounds encompassing the claimed compound, as well as over 230,000 other compounds. The Board contended, however, that the prior art contained two examples that disclosed the exact precursors of the claimed compound. The Court found that these examples disclosed exact precursors only to the extent that one selects the correct acid to react with a particular tertiary amine, which also must be selected. *In re Arkley*, 455 F2d at 588, 172 USPQ at 526. The court further found that there was nothing in the reference that " 'clearly and unequivocally' directs those skilled in the art to make this selection..." *Id.* Thus, the court reversed the rejection under 102.

Applying this legal precedence to the present case, Khouri fails to clearly and unequivocally disclose the claimed composition or direct those skilled in the art to the compound without any need for picking, choosing, and combining various disclosures as is required for a proper anticipation rejection. Thus, Khouri does not anticipate the present claims. Khouri merely includes a grocery list of conventional additives. There is no disclosure of a thermoplastic resin composition comprising, *inter alia*, a flame retardant composition consisting essentially of an organophosphate compound and a polyhydric alcohol. In fact, Khouri refers to the use of polyhydric alcohol as a mold release agent. Those skilled in the art would not be lead to make the flame retardant composition selection

as claimed by applicants. None of the examples included in Khouri disclose the claimed combination of an organophosphate compound and a polyhydric alcohol. Accordingly, Khouri fails to anticipate Applicant's claimed flame retardant composition consisting essentially of an organophosphate compound and a polyhydric alcohol as is required under section 102.

Since Khouri fails to clearly and unequivocally disclose the claimed composition or direct those skilled in the art to the compound without any need for picking, choosing, and combining various disclosures, Khouri fails to establish anticipation under section 102. Accordingly, it is respectfully requested that the rejection be withdrawn as applied to Claims 1-21.

3. U.S. Patent Application No2003/01395504 to Miebach (hereinafter "Miebach")

Miebach generally describes flame retardant compositions that include at least one aromatic polycarbonate, at least one silicone source, at least one boron source, and optionally, at least one member selected from the group consisting of an anti-drip agent, a second thermoplastic resins which is not a polycarbonate, and a rubber modified graft copolymer. In addition, the compositions may further include other additives such as organic phosphorous species and polyfunctional alcohols as stabilizing compounds.

It is noted that these various additives are in addition to the various components of the disclosed flame retardant composition, which already have a flame retardant component therein, i.e., at least one boron source. Because of this, Meibach fails to disclose a thermoplastic resin composition comprising, *inter alia*, "a flame retardant composition consisting essentially of an organophosphate in an amount less than or equal to about 20 parts by weight for every 100 parts by weight of the thermoplastic resin, and a polyhydric alcohol in an amount of about 0.25 to about 5.0 parts per weight for every 100 parts by weight of the thermoplastic resin" as recited by Applicants in each independent claim. There is no "at least one boron source" as is disclosed by Meibach. For at least this reason, it is respectfully request that the rejection under 35 USC §102(e) applied to Claims 1-21 be withdrawn.

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B. Claims 1, 4, 6, 8-11, 13-16, and 18-21 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 6,150,443 to Nodera. Applicants respectfully traverse this rejection.

4. U.S. Patent No. 6,150,443 to Nodera (hereinafter "Nodera")

Nodera generally describes flame retardant polycarbonate compositions including a polycarbonate resin, a styrenic resin, a flame retardant, and an antistatic agent.

Independent Claims 1, 11, and 16 include the limitation of "a thermoplastic resin selected from the group consisting of a polyphenylene ether resin, a polystyrene resin, an acrylonitrile-butadiene-styrene resin, and mixtures thereof". Nodera fails to teach a composition including a thermoplastic resin selected from the group consisting of a polyphenylene ether resin, a polystyrene resin, an acrylonitrile-butadiene-styrene resin, and mixtures thereof. Nodera requires a polycarbonate resin in its compositions.

Accordingly, Nodera fails to anticipate Claims 1, 4, 6, 8-11, 13-16, and 18-21 and withdrawal of the rejection under section 102 is now requested for at least this reason.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-21 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Nodera, Nishihara, Khouri or Miebach. Applicants respectfully traverse this rejection.

Nodera, Nishihara, Khouri or Miebach are discussed above.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

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There is no suggestion in the prior art of a flame retardant composition consisting essentially of an organo phosphate in an amount less than or equal to about 20 parts by weight for every 100 parts by weight of the thermoplastic resin, and a polyhydric alcohol in an amount of about 0.25 to about 5.0 parts per weight for every 100 parts by weight of the thermoplastic resin. Moreover, even if there were, there would be no expectation of success. Applicants have claimed a specific range for the polyhydric alcohol. Lower quantities have no significant impact on flame retardance whereas high quantities may reduce flame retardancy. (see paragraph 0051). In Nishihara, the polyhydric alcohol is characterized as a fluidity improver in a range of about 0.1 to 20 parts by weight per 100 parts by weight of the thermoplastic resin (Nishihara at column 14, ll. 58-63). In Khouri, the polyhydric alcohol is characterized as a mold release agent and is anywhere from about 0.0001 to about 10 percent by weight of the blend (Khouri at column 8, ll. 33-39). In Meibach, the polyhydric alcohol is at about 0.1 weight percent to 10 weight percent (Meibach, Claim 29). Accordingly, one of ordinary skill in the art would fail to appreciate the synergistic effect between the polyhydric alcohol and the organophosphate at the claimed concentrations. In Nodera, the organophosphate is at about 1 to about 50 parts by weight relative to 100 parts of the resin. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art. That is clearly not the case here. There is no motivation or suggestion of a flame retardant composition consisting essentially of an organo phosphate in an amount less than or equal to about 20 parts by weight for every 100 parts by weight of the thermoplastic resin, and a polyhydric alcohol in an amount of about 0.25 to about 5.0 parts per weight for every 100 parts by weight of the thermoplastic resin. Nor is there any expectation of success with the ranges broadly stipulated by the various prior art references to provide the claimed synergistic flame retardant combination.

Even where a *prima facie* case of obviousness exists, obviousness may be rebutted by a showing of "unexpected results", i.e., comparative test data showing that the claimed invention possesses unexpectedly improved properties, or properties that the prior art does not have. *In re Dillon*, 919 F.2d 688, 692-93, 16 U.S.P.Q.2d 1897, 1901 (Fed. Cir. 1990).

The claimed combination represents such an unexpected result. As shown in Applicants' Table 1, reproduced in full below, flame resistance was unexpectedly improved by including a polyhydric alcohol in the composition. The synergistic effect caused by the combination of the polyhydric alcohol and the organophosphate permits a reduction in organophosphate compound, which represents a significant commercial advantage. As noted by Applicants in the specification at paragraph [0075], "the cost of the formulation is significantly reduced since the use of an inexpensive polyhydrol such as pentaerythritol as the synergist enables the reduction in the total amount of RDP or BPA-DP used and still provide effective flame retardance.".

In Table 1, examples 1 and 2 are thermoplastic compositions including 16 and 12 parts by weight of resorcinol bis(diphenylphosphate) (RDP), respectively, per 100 parts of a polyphenylene ether resin. As demonstrated in Example 2, lowering the amount of RDP in the formulation lowered the UL94 flame retardancy rating to V1. However, as demonstrated by Examples 3-5, adding the polyhydric alcohol to the formulation including the lower amount of RDP, surprisingly increased the flame retardancy from V1 to VO. Moreover, other properties were improved such as the Izod Impact. As such, the claimed invention has unexpectedly improved properties not taught or suggested by the prior art, especially since none of the prior art characterize the polyhydric alcohols as a flame retardant additive. Rather, the polyhydric alcohols are characterized as mold release agents, flow modifiers, and the like.

Table 1.

Example	UL 94 Rating	Izod impact (KJ/m^2)	Tensile Modulus (Gpa; % elongation)		Flow Pa-s at 1500/second	Heat deflection temperature (HDT) (°C)
1*	VO	13.54	2.04	17.60	151	82.0
2*	V1	14.59	2.66	16.04	170	83.3
3	V0	15.29	2.37	15.40	135	81.8
4	V0	19.37	2.30	16.20	133	82.2
5	V0	16.7	2.51	14.38	130	82.3

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In view of the foregoing, Applicants respectfully request the reconsideration and withdrawal of the rejection of Claims 1-21 under 35 U.S.C. § 103(a) over Nodera, Nishihara, Khouri or Miebach.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 07-0862 maintained by Assignee.

Respectfully submitted,

CANTOR COLBURN LLP
Applicants' Attorneys

By: _____
Peter R. Hagerty
Registration No. 42,618

Date: September 22, 2003
Customer No.: 23413
Telephone: (860) 286-2929